

Trait anger and wellbeing: the mediating role of emotion regulation and the moderating role of affects

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Abstract: Despite the large literature concerning the associations between trait anger, wellbeing and emotion regulation, the underlying mechanisms between these constructs remain unclear. Thus, the aims of this study are to examine the associations between these variables; to test the mediating role of emotion regulation strategies between trait anger and wellbeing and its dimensions; and to test whether positive and negative general affects have a moderating role between trait anger and emotion regulation. In a sample of 280 adults (93% female, $M_{age} = 25.41$, $SD = 8.54$), trait anger was positively correlated with negative affects, and negatively with positive cognitive reappraisal, wellbeing (and all its dimensions: emotional, social and psychological wellbeing), and positive affects. Positive reappraisal was positively correlated with wellbeing (and all its dimensions: emotional, social and psychological wellbeing) and positive affects and negatively with negative affects. Acceptance was positively correlated with wellbeing (and two out of its three dimensions: emotional and psychological wellbeing) and positive affects, and negatively with negative affects. The results of mediation analyses showed that positive reappraisal mediated the links between trait anger and wellbeing and its dimensions. The moderation results showed that only negative affects moderated the link between trait anger and positive reappraisal. These results emphasize the mechanisms of the link between trait anger and wellbeing. The importance of addressing emotion regulation strategies during therapy and counselling sessions is also discussed.

Keywords: Positive reappraisal, Acceptance, Emotion regulation, Wellbeing, Positive and negative affects

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Introduction

Trait anger and wellbeing

Trait anger refers to an individual's innate tendency to interpret a variety of circumstances as annoying or irritating, resulting in a heightened anger response (Spielberger et al., 1983).

Wellbeing is a multifaceted psychological construct, defined in several conceptual frameworks (Charlemagne-Badal et al., 2015; Keyes et al., 2010; Oades & Mossman, 2017; Seligman, 2011) and has numerous effects at both the individual and societal levels. According to several theoretical frameworks, the concept of wellbeing can be conceptualized as an outcome resulting from the presence of positive emotions, positive interpersonal relationships, engagement in meaningful activities, and the accomplishment of personal goals and aims (Seligman, 2011). Additionally, Lamers and colleagues (2011) suggest that wellbeing consists of emotional, social, and psychological factors, all of which contribute to an individual's mental health. This implies that wellbeing represents the experience of positive emotions, adequate social functioning, and an overall optimal functioning of the individual.

Extensive research indicates that trait anger is linked to numerous negative outcomes, including lower levels of wellbeing (Diong & Bishop, 1999; Yan et al., 2023) and decreased life satisfaction. Recent evidence shows that trait anger is also linked to higher perceived negative impacts of trait anger on the life domains such as work/studies, free time activities, and social relations (Gröndal et al., 2023). Additionally, trait anger correlates with reduced levels of gratitude, forgiveness and psychological wellbeing (Donat Bacioğlu, 2020). Furthermore, accentuated tendencies towards aggressive behaviors and hostile thoughts (Veenstra et al., 2018), as well as interpersonal problems (Baron et al., 2007) correlate with trait anger. Moreover, there is a positive association between trait anger and negative life experiences, as indicated by the research conducted by Puskar and colleagues (2008). This is caused by the fact that feelings of irritation and a perception of unfairness resulting from negative life events play an important role in eliciting anger (Potegal & Stemmler, 2010). Thus, it is important to understand the links between trait anger and wellbeing, as the emotional, social and psychological wellbeing together with other factors play an important role in mental health (Lamers et al., 2011).

Emotion regulation as mediator

The ability to regulate intense negative emotions may be one of the most important factors in maintaining subjective well-being (Garnefski & Kraaij, 2006; Gross & John, 2003; Ursu & Măirean, 2022). Research has shown that people who use adaptive cognitive and behavioral emotion regulation strategies

tend to have a higher level of psychological well-being and lower levels of symptoms of depression, anxiety and stress (Garnefski & Kraaij, 2006; Kraaij & Garnefski, 2019).

Gross (1998) defined emotion regulation as the processes used by individuals for selecting which emotions they have, when and how they experience or express those emotions. Numerous emotion regulation strategies were proposed. Reappraisal and acceptance are among the most studied strategies. Specifically, reappraisal means giving different significance to an emotional event with the aim of changing one's emotional experience (Gross, 1998), while acceptance consists of an individual's disposition towards accepting internal experiences and their willingness to remain connected with these experiences without attempting to change, control or avoid them (Hayes et al., 1999). Additionally, they are also essential components for two therapeutically approaches: reappraisal is widely used in Cognitive-Behavioral Therapy (CBT, Beck, 2005), while acceptance in Acceptance Commitment Therapy (ACT, Hayes et al., 2006).

In terms of the links between trait anger and emotion regulation, a study found that people high in anger expression use less active coping, more precisely, strategies such as planning, acceptance, restraint coping, positive interpretation and growth, and suppression of competing activities (Diong & Bishop, 1999). Moreover, trait-anger is positively linked to challenges in regulating anger (Beames et al., 2019), which in turn can result in aggressive behavior and adverse health outcomes (Baron et al., 2007). In contrast, the existent substantial amount of empirical research indicates that the use of emotion regulation strategies, such as cognitive reappraisal and acceptance, is linked to numerous positive outcomes. These benefits consist of enhanced mental well-being, engaging in protective behaviors, and higher level of life satisfaction and resilience (Troy & Mauss, 2011; Yildirim, 2019; Yildirim & Arslan, 2020).

In summary, the previous research indicates that using adaptive emotion regulation strategies, such as positive reappraisal and acceptance, may enhance individuals' capacity to deal and cope with adverse life events, ultimately leading to improved well-being. Having this in mind, we will test whether positive reappraisal and acceptance mediate the link between trait anger and wellbeing in an adult non-clinical sample.

Positive and negative affects as moderator

Because high trait anger individuals interpret a variety of circumstances as annoying or irritating, they respond to these events with heightened anger response (Spielberger et al., 1983), and they experience more negative emotions such as anger, irritation, unfairness (Potegal & Stemmler, 2010). Additionally,

according to Nakagawa and colleagues (2017), the failure to appropriately regulate anger over an extended period of time might result in the development of hostility, personal animosity, and a desire for revenge, while appropriate anger regulation is associated with improved quality of life and better interpersonal interactions (Phillips et al., 2006). Thus, having this in mind, we will test whether positive and negative affects moderate the link between trait anger and emotion regulation.

The present study

The aim of the present study is to investigate the possible mediator role of emotion regulation between trait anger and wellbeing and the possible moderating role of positive and negative affects between trait anger and emotion regulation. In order to test this mediation model, we firstly aim at investigating the associations between trait anger, two emotion regulation, acceptance and positive reappraisal, wellbeing and its dimensions, and positive and negative affects. Secondly, we assess the associations between acceptance, positive cognitive reappraisal, wellbeing and its dimensions. We expect that positive reappraisal and acceptance will mediate the links between trait anger and wellbeing and its dimensions, while positive and negative affects will moderate the links between trait anger and emotion regulation (positive reappraisal and acceptance).

Method

Participants

The characteristics of a subsample from this sample was presented in Ursu & Turliuc (under review). Undergraduates' students from Educational Sciences and Psychology classes at Ștefan cel Mare, University of Suceava were invited to participate in this study. All participants received extra course credit. The sample for this study consists of 280 participants (93% females), aged between 18 and 65 years old ($M = 25.41$, $SD = 8.54$). At the time of collecting the data, the majority of participants (62.5%) have a high school diploma, twenty-five percent have a bachelor's degree and the rest of participants have postgraduate education. Related to romantic status, thirty percent of participants are married, thirty-four of participants are involved in a romantic relationship, while thirty-six percent of participants are single.

Measures

Trait anger: Participants' trait anger was assessed using a Romanian validated version of trait anger (Goldberg et al., 2006; Iliescu et al., 2015). This self-report scale consists of 10 items of which 5 items are reversed, assessed on

a 5-point Likert scale, from 1 which means totally disagree to 5 which means totally agree. The Alpha Cronbach's coefficient, for this study, was .85.

Positive and Negative Affect Schedule: The expanded version of PANAS-X (Watson & Clark, 1994) adapted and validated for the Romanian population by Cotiga (2011) was used to assess participants' general positive and negative affectivity. PANAS-X consists of 46 items, organized in two dimensions: 22 items assess positive affect (PA) and while 24 items assess negative affect (NA). All the items are evaluated with a 5-point Likert scale from 1 (very little or not at all) to 5 (very much). In this study, the Alpha Cronbach's coefficient has very good values (PA $\alpha = .92$, NA $\alpha = .93$).

Habitual emotion regulation: The positive reappraisal subscale from Cognitive Emotion Regulation Questionnaire (CERQ, Garnefski et al., 2002) adapted to the Romanian population by Perte and Miclea (2011), was used to assess participants habitual use of positive reappraisal in daily-life. This subscale consists of 4 items assessed on a 5-point Likert scale where 1 means not at all true for me and 5 extremely true for me.

The non-acceptance subscale of the Affective Questionnaire Style (AQS, Hofmann & Kashdan, 2009) was used to assess participants' habitual use of acceptance. This self-report subscale consists of 5 items, evaluated on a 5-point Likert scale from 1 (not at all true for me) to 5 (extremely true for me). Both subscales have good internal consistency (Positive reappraisal $\alpha = .84$, Acceptance $\alpha = .72$).

Wellbeing: A Romanian translation of *Mental Health Continuum-Short Form* (Lamers et al., 2011) was used to evaluate participants' psychological, emotional and social wellbeing. This scale is a self-report scale and consists of 14 items. All items were scored using a six-point Likert-type scale from 1 (never) to 6 (every day). The scale can be used for assessment of general wellbeing as well as three dimensions of wellbeing. All Cronbach's Alpha coefficients were very good, the Cronbach's Alpha coefficient of MHC-SF was .91, while for emotional wellbeing was .84, social wellbeing was for .78, and for psychological wellbeing was .83.

Procedure

This study is part of a larger study assessing the simultaneous effects of emotion regulation strategies on subjective experience. The procedure is the same as described in Ursu & Turliuc (under review). In the following, all relevant information related to the procedure are repeated.

The protocol of this study was approved by the Ethics Committee of Ștefan cel Mare University of Suceava prior to the recruitment of any participants. All participants provided informed consent. All scales were filled out online. The first section of the questionnaire assessed demographic

questions, trait affectivity, wellbeing, habitual use of emotion regulation, general affectivity.

Results

Preliminary analyses

Table 1 presents means, standard deviations, and correlations between the main variables. In general, the scores for the study's variables were moderate for all variables (trait anger, acceptance, positive reappraisal, emotional wellbeing, psychological wellbeing, social wellbeing, wellbeing, positive affects) except for negative affects where the score is rather low.

Table 1. Descriptive statistics and correlations between the study's variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Trait anger	2.96	.36								
2. Acceptance	3.45	.72	-.02							
3. Positive reappraisal	3.58	.87	-.17**	.22**						
4. Emotional wellbeing	3.97	.74	-.23**	.21**	.50**					
5. Psychological wellbeing	3.91	.68	-.25**	.18**	.55**	.83**				
6. Social wellbeing	3.34	.75	-.14*	.01	.43**	.64**	.72**			
7. Wellbeing	3.72	.65	-.22**	.14*	.55**	.87**	.94**	.88**		
8. Positive affects	3.53	.58	-.24**	.19**	.51**	.68**	.73**	.52**	.70**	
9. Negative affects	2.22	.66	.37**	-.18**	-.39**	-.66**	-.66**	-.52**	-.66**	-.48**

Note: * $p < .05$; ** $p < .01$

In order to test the first hypothesis of the study, several Person Correlations were conducted. The results showed that trait anger negatively correlates with positive reappraisal, emotional wellbeing, psychological wellbeing, social wellbeing, wellbeing and positive affects, and positively correlates with negative affects. No significant association was found between trait anger and acceptance. Additionally, the results showed that acceptance correlates positively with two out of three dimensions of wellbeing (emotional and psychological) and with wellbeing, the total score, and positive affects and negatively with negative emotions. Furthermore, positive reappraisal positively correlates with all dimensions of wellbeing (emotional, psychological and social), with total score of wellbeing and positive affects and negatively with negative affects.

Testing the mediation models

In order to test whether emotion regulation would mediate the link between trait anger and wellbeing and its dimensions, several mediation models were run. For each model we only used the variables which previously significantly correlated with the both independent and dependent variables. In the following, we will present the results of each model.

Path analysis. The total effect of trait anger on wellbeing and its dimensions

All total effects of trait anger on emotional wellbeing ($c_1 = -.47, p = .001$), on social wellbeing ($c_2 = -.28, p < .05$), on psychological wellbeing ($c_3 = -.47, p = .001$), and wellbeing ($c_4 = -.40, p = .001$) are negative and statistically significant.

Path analysis. The direct effect of trait anger on positive reappraisal and the direct effect of positive reappraisal on wellbeing and its dimensions

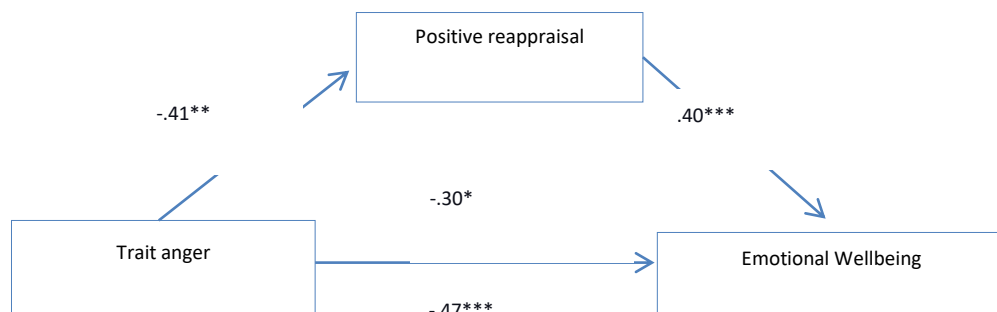
The direct effect of trait anger on positive reappraisal is negative and statistically significant ($a_1 = -.41, p = .003$), and the direct effects of positive reappraisal on emotional wellbeing ($b_1 = .40, p < .001$), on social wellbeing ($b_2 = .36, p < .001$), on psychological wellbeing ($b_3 = .41, p < .001$) and wellbeing ($b_4 = .39, p < .001$) are positive and statistically significant.

Path analysis. The indirect effect of trait anger on wellbeing and its dimensions through positive reappraisal

The indirect effect of trait anger on emotional wellbeing through positive reappraisal is statistically significant ($a_1 * b_1 = -.16, CI [-.28; -.06]$), on social wellbeing through positive reappraisal is statistically significant ($a_2 * b_2 = -.15, CI [-.25; -.05]$), on psychological wellbeing through positive reappraisal is statistically significant ($a_3 * b_3 = -.17, CI [-.28; -.06]$), on wellbeing through positive reappraisal is statistically significant ($a_4 * b_4 = -.16, CI [-.27; -.06]$). In other words, positive reappraisal partially mediates the link between trait anger and emotional wellbeing, positive reappraisal fully mediates the link between trait anger and social wellbeing, positive reappraisal partial mediates the link between trait anger and psychological wellbeing and positive reappraisal partial mediates the link between trait anger and wellbeing. For more details see Figure 1, Figure 2, Figure 3 and Figure 4.

Additionally, we also tested whether positive and negative affects moderate the links between trait anger and positive reappraisal. The moderation analysis was conducted using Jamovi, using R Core Team (2021). The results showed that general positive affects do not moderate the link between trait anger and positive reappraisal ($b = -.10, SE = .09, p = .29$), while negative affects moderate the link between trait anger and positive reappraisal ($b = .17, SE = .08, p = .049$). The simple slope of trait anger on positive reappraisal was significant

at all three levels of negative affects, low ($b = -.43, SE = .09, p < .001$), medium ($b = -.32, SE = .06, p < .001$) and high ($b = -.21, SE = .08, p < .001$). In other words, the negative link between trait anger and positive reappraisal is stronger for individuals who reported a lower and medium level of negative affects.



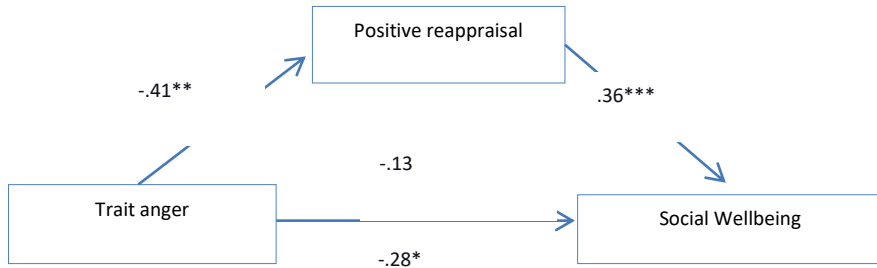
Note: $*p < .05$; $** p < .01$; $*** p < .001$

Figure 1. Mediating effect of positive cognitive emotion regulation between trait anger and emotional wellbeing

Discussion

This study investigated a model in which emotion regulation, more precisely, positive reappraisal and acceptance were used as mediators in the relationship between trait anger and wellbeing. Additionally, we also tested if positive and negative affects moderate the links between trait anger and positive reappraisal and acceptance. The results showed that trait anger was negatively significantly correlated with positive reappraisal and wellbeing and all its dimensions (psychological, emotional and social wellbeing), positive reappraisal was positively significantly correlated with wellbeing and all its dimensions (psychological, emotional and social wellbeing), while acceptance was positively correlated with wellbeing and two out of three dimensions (psychological and emotional wellbeing). Furthermore, the results of mediation model showed that only positive reappraisal mediated the links between trait anger and wellbeing and its dimensions. Additionally, according to the moderation analyses, only negative affects moderated the link between trait anger and positive reappraisal. In other words, these findings suggest that positive reappraisal mediates the link between trait anger and wellbeing and all its dimensions, while trait anger has negative predictive effects on positive reappraisal, wellbeing and all its dimensions (psychological, emotional and social wellbeing), respectively. Meanwhile, the negative associations between

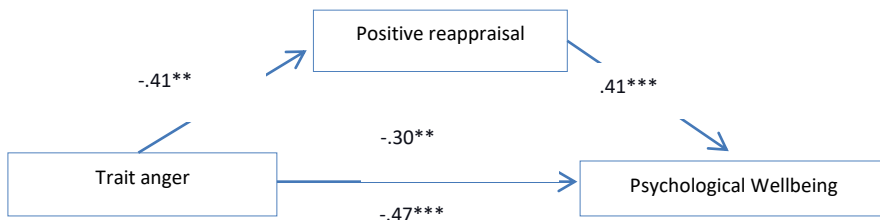
trait anger and positive reappraisal are stronger for those with a low and medium negative general affectivity.



Note: $*p < .05$; $** p < .01$; $*** p < .001$

Figure 2. Mediating effect of positive cognitive emotion regulation between trait anger and social wellbeing

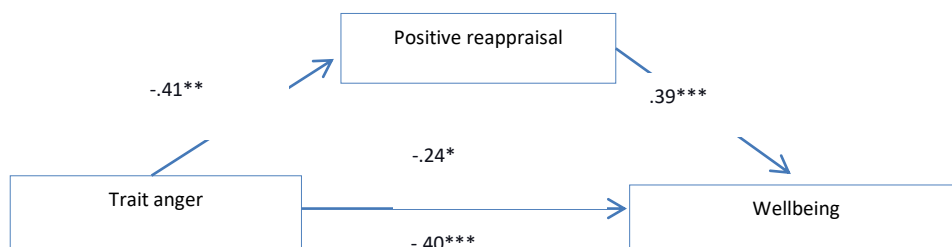
Emotion regulation was defined as the processes used by individuals for selecting which emotions they have, when and how they experience or express those emotions (Gross, 1998). During regulation, people may gradually decrease the intensity of aroused emotions. Both the results of this study and previous results show a negative association between trait anger and active coping strategies such as positive reappraisal or acceptance (Diong & Bishop, 1999). Although the results of the same study showed a negative association between trait anger and active coping strategies such as acceptance, no significant association was found between trait anger and acceptance in this study. However, in that study, they conducted the Pearson correlations by summing up the scores of active strategies, thus, they did not provide the correlations for each strategy. Nevertheless, the results of our study are in accordance with the results related to that fact that people high-anger trait have regulation difficulties (Baron et al., 2007).



Note: $*p < .05$; $** p < .01$; $*** p < .001$

Figure 3. Mediating effect of positive cognitive emotion regulation between trait anger and psychological wellbeing

Related to the negative associations between trait anger and wellbeing and its dimensions, similar results were found in previous studies. For instance, trait anger was linked to various negative outcomes, such as lower levels of wellbeing (Donat Bacioğlu, 2020; Diong & Bishop, 1999; Yan et al., 2023). Additionally, trait anger was linked to other mental health related concepts such as decreased life satisfaction (Gröndal et al., 2023), reduced levels of gratitude and forgiveness (Donat Bacioğlu, 2020), engaging in aggressive behaviors and having hostile thoughts (Veenstra et al., 2018), as well as dysfunctional interpersonal relationships (Baron et al., 2007).



Note: * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 4. Mediating effect of positive cognitive emotion regulation between trait anger and wellbeing

Positive associations were found between positive reappraisal and wellbeing and its dimensions. The same pattern of results was found for the links between acceptance and wellbeing and its dimensions, except the link between acceptance and social wellbeing which was not statistically significant. Same results were found in previous studies, showing the positive associations between adaptive emotion regulation strategies such as reappraisal and acceptance and wellbeing (Garnefski & Kraaij, 2006; Gross & John, 2003; Kraaij & Garnefski, 2019, Ursu & Măirean, 2022; Yan 2023). Our results and previous studies results suggest that individuals who use adaptive emotion regulation strategies have a better psychological, emotional and social wellbeing.

We added additional knowledge by testing a mediation model with trait anger independent variable, emotion regulation as mediator and wellbeing and its dimensions as dependent variable. The results showed that positive reappraisal partially mediated the link between trait anger and wellbeing, emotional and psychological wellbeing, while positive reappraisal fully mediated the link between trait anger and social wellbeing. These results suggest the underlying mechanisms for the negative link between trait anger and wellbeing and its dimensions. These findings suggest that adults with low trait

anger are more likely to use cognitive adaptive emotion regulation strategies such as positive reappraisal and have better psychological health.

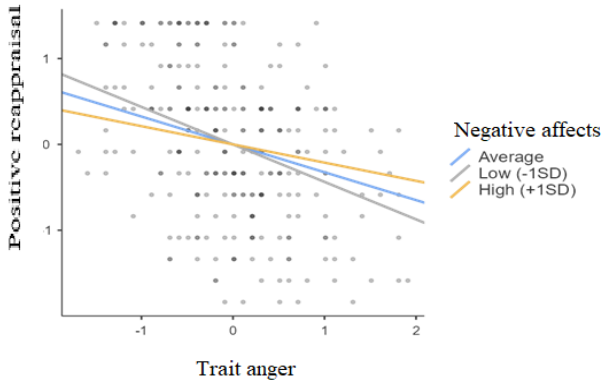


Figure 5. The interactive effect of trait anger and negative affects on positive reappraisal

Furthermore, we also tested if positive and negative general affects moderate the links between trait anger and emotion regulation. We found that only negative general affects moderated the link between trait anger and positive reappraisal. We found a significant link between trait anger and positive reappraisal at all three levels of negative affects: low, medium and high. However, the results showed that the negative link between trait anger and positive reappraisal was stronger among the individuals with low negative general affects. In other words, people with low level of negative general affectivity use less positive cognitive reappraisal when they have high levels of trait anger.

According to positive psychology approach, an effective way to dealing with a problem is by teaching individuals to find resources that will enable them to become healthier and happier instead of focusing on the problem (Schwarzer & Knoll, 2003). However, the results of this study suggest that individuals can find some resources in unexpected places. Negative affects were shown to bring benefits to both cognition and motivation (Forgas, 2013) and this study, they seem to attenuate the negative link between trait anger and positive cognitive reappraisal.

The results of the present study have clinical implications. More specifically, the fully and partially mediation findings highlight the rationale behind the development of preventive interventions that focus on instructing

individuals in the utilization of cognitive adaptive emotion regulation strategies. For instance, developing abilities to positively reappraise events who elicits strong negative emotions such as anger, during therapy or counselling sessions may have a positive impact on individuals' wellbeing. Previous research has already shown that teaching individuals to reappraise negative events led to experiencing lower levels of negative emotions such as anger, and disgust (Porat et al., 2020) and having better wellbeing and better social adaptation (Shahar et al., 2018). These interventions would serve as preventive measures for promoting health, aiding individuals in cultivating a wide array of healthy strategies to cope with the various detrimental consequences of adverse daily life.

Our study has certain limitations. Firstly, the correlational design used in this study limits the possibilities to draw any certain causal conclusions from the mediation model results discussed above. To determinate the stability of the mediation effect over time, it is recommended that future studies should use longitudinal designs to provide empirical evidence in support of this assumption. The second limitation of this study was related to the utilization of convenience sampling as the method for data collection. Thus, the generalizability of the findings from this study to the wider population is limited and not recommended. Finally, another limitation refers to the self-report scales used in this study. Future studies should employ other types of measurements, more objective, such as physiological measures, in order to bring additional details for the associations between trait anger, emotion regulation and wellbeing.

In conclusion, our findings indicated that positive reappraisal was positively correlated with wellbeing, all its dimensions, and positive affects, and negatively with negative affects. Acceptance was positively correlated with wellbeing (and two out of three its dimensions: emotional and psychological wellbeing) and positive affects, and negatively with negative affects. The results of mediation analyses showed that only positive reappraisal mediated the links between trait anger and wellbeing and its dimensions, while only negative general affects moderated the links between trait anger and positive reappraisal.

Funding

This work was co-funded by the European Social Fund, through Operational Programme Human Capital 2014-2020, project number POCU/993/6/13/153322, project title "*Educational and training support for PhD students and young researchers in preparation for insertion into the labor market*".

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